Obituary

PROF. J. C. F. GUYON.

THE death of Prof. Jean Casmir Félix Guyon, at the end of his eighty-ninth year, removes the last of three famous Paris specialists in genito-urinary surgery; of these Civiale was much the senior, whereas Albarran (1860-1912) was Guyon's brilliant pupil and succeeded him in the professorial chair so far back as 1896. Guyon, though naturally little known to the younger generation of British surgeons, ranks with the late Sir Henry Thompson (1820-1904), with whom professionally he may be compared. Both these pioneers adopted and improved the eminent American surgeon Bigelow's practice of litholapaxy, or the complete removal of all the fragments of a crushed calculus from the urinary bladder at one sitting. Guyon was recognised as a great teacher in his speciality, and for years attracted students from all parts of the world to his clinic at the Necker Hospital.

Guyon was born on July 21, 1831, at St. Denis, in the island of Réunion, and it may be mentioned as a rather curious coincidence that his famous successor, Joaquin Albarran, was also born abroad, namely, in Cuba. Guyon worked first at Nantes and then at Paris, where he was *interne* in 1854 and prosector to the faculty in 1858. His graduation thesis, on "Fibroid Tumours of the Uterus," bears the date 1860; in 1862 he became surgeon to the Paris hospitals, in 1863 *agrégé,* and professor in 1877. His two chief works, "Leçons cliniques sur les maladies des voies urinaires" (1881)—which passed into a second edition in 1885, and a third in two volumes in 1894–96—and "Leçons cliniques sur les affections chirurgicales de la vessie et de la prostate" (1886)—edited by his former resident, Dr. F. P. Guiard—embodied his teaching at the Necker Hospital, and were both translated into German and into Russian. Though famous as a genito-urinary specialist, Guyon took a broad view of surgery, adopted Lister's methods as early as 1876, and was the author of a work of 672 pages on general surgery, dealing with diagnosis and operations in general, entitled "Eléments de chirurgie clinique." Although now somewhat forgotten from his great age and the interval of almost a quarter of a century since he quitted the chair of genito-urinary surgery, Guyon received the honours due to his work and position; he was a Commander of the Legion of Honour, a member of the Institute (Academy of Sciences) and of the Academy of Medicine, and on August 3, 1900, his former pupils, of whom Lucas-Championnière was the senior, presented him with a medal executed by Bottée as a mark of their affection and admiration.

MR. ALEXANDER JAMES MONTGOMERIE BELL, who died on July 3, aged seventy-four, was a fellow of the Geological Society who devoted his leisure for many years to the study of the deposits in southern England in which palæolithic flint implements occur. His researches on the gravels and associated deposits at Wolvercote, near Oxford, were especially valuable, and were described in a paper published in the Geological Society's Journal in 1904. He regarded certain disturbed layers as "ice-drifts," and emphasised the importance of distinguishing "rainwash-drifts" from regular deposits. From an examination of the fossil remains of plants and beetles, he concluded that in late Pleistocene times the climate of the Thames valley was more continental than it is at present. It is understood that Mr. Bell left a general summary of the results of his researches in a manuscript, which we hope may be found in a form suitable for publication.

Notes.

DR. G. C. SIMPSON, F.R.S., Meteorologist to the Government of India, has been appointed Director of the Meteorological Office as successor to Sir Napier Shaw, who retires on reaching the age-limit after brilliant pioneer service. Dr. Simpson was meteorologist and physicist to the British Antarctic Expedition, 1910–13, and served on the Indian Munitions Board from 1917 to 1919. In 1905 he was appointed a Scientific Assistant in the Meteorological Office, and in 1906 joined the staff of the Indian Meteorological Department. He is the author of a number of papers of scientific importance, including one on the electricity of rain and its origin in thunderstorms, published in the Phil. Trans. in 1909. Only last year Dr. Simpson completed an elaborate discussion of the meteorological work of the British Antarctic Expedition, 1910–13. As successor to Sir Napier Shaw his appointment promises a continuation of progress along lines which will advance meteorological science and maintain the high position which the British Meteorological Office now occupies through its work in recent years.

DR. L. V. KING has been appointed Macdonald professor of physics at the Macdonald Physics Building, McGill University. The chair has been held in succession by Prof. H. L. Callendar, Sir Ernest Rutherford, Dr. H. T. Barnes, Prof. H. A. Wilson, and by the present director, Dr. A. S. Eve. Prof. King was born at Toronto, Ontario, in 1886. In 1905 he graduated B.A. at McGill University with first-class honours and gold medal in mathematics and physics. He was elected scholar of Christ's College, Cambridge, in 1906, and appointed lecturer in physics at McGill University in 1910, assistant professor in 1912, and associate professor in 1915, when he also was awarded the D.Sc. degree of McGill University. In 1915 Prof. King began investigations on submarine acoustics for the Electrical and Submarine Committee of the British Board of Inventions. He has been engaged for some time on important researches on the efficiency of fog-signal machinery and on the measurement and distribution of sound.

IN an illuminating article in the *Times* of July 29 Dr. Herbert Levinstein explains the close co-operation of the German Government and the combine of the German aniline dye manufacturers known as the "Interessen Gemeinschaft" or the "I.G.," which enabled the German General Staff to provide large quantities of high explosives and poison gases when the need arose after the Battle of the Marne. Until then the aniline dye factories had not been mobilised; they had continued their ordinary vocation of manufacturing dyes because the great accumulation of high explosives by the Germans had been expected to overwhelm the French in a short time. After the Marne, however, there was an actual shortage of munitions in Germany, and the vast resources of the dye factories were then requisitioned for the production of further quantities of high explosives and of poison gases. Whilst the varied collection of dye-making plant in Germany could be immediately adapted for this purpose, the special plant erected in this country cannot so easily be utilised in the reverse direction, and it is vitally necessary that we should possess extensive plants for the manufacture of dyes comparable with those of the "I.G.," so that not only can the necessary provision be made for any future war, but also facilities for chemical research, which, in chemical warfare and in the dye industry, can be supported only by the industry itself, may be provided to enable us to maintain a premier position.

WE have now had an opportunity of examining at the London office of Messrs. Barr and Stroud, Ltd. (15 Victoria Street, S.W.1), the latest form of that remarkable instrument devised by Dr. E. E. Fournier d'Albe and perfected by Prof. Archibald Barr by which it is possible for a blind man to read ordinary print by listening to sounds in a telephone receiver. The apparatus, which is called the optophone, was fully described by the inventor in an article in NATURE of May 6 last, where the way in which, by the use of selenium cells, a series of distinctive sounds is produced as the "eye" of the instrument passes over the letters was explained. To anyone who has not tested the instrument it is difficult to believe in the possibility of making the sound combinations sufficiently distinctive for even a trained operator, blind or otherwise, to recognise the different letters easily. A few minutes' experimenting, however, is sufficient to dispel all such doubts. After realising the principles of the action, the present writer was, in one or two cases, actually able to name correctly the simpler letters at a first attempt, and there is no doubt that a blind person could be trained to read with the apparatus more easily than he could become expert in picking up a wireless message in Morse. The way in which the letter "w," for example, is represented by beautiful little descending and ascending arpeggios sung softly in one's ear, or a single harmonious chord denotes an "i," is quite fascinating. The adjustments of the apparatus, although delicate, are not beyond the powers of a blind reader of intelligence, and we feel sure that the institutions (including St. Dunstan's and others) which have already acquired these instruments will find them appreciated by the sightless readers whom they train. We have not the space to direct further attention to the numerous little mechanical details which contribute so much to the success of the instrument. It must suffice to say that they are largely the result of long personal attention by Prof. Barr himself, who had at his disposal the unrivalled resources of the well-known firm of range-finder manufacturers.

MAJOR W. E. SIMNETT has retired from the direction and editorship of the *Technical Review* on his appointment to direct the Intelligence Branch of the Ministry of Transport.

THE Harveian oration of the Royal College of Physicians will be delivered by Sir Frederick Andrewes on St. Luke's Day, October 18; the Horace Dobell lecture by Sir William Leishman on November 2; the Bradshaw lecture by Dr. R. C. B. Wall on November 4; and the FitzPatrick lectures on the History of Medicine by Dr. E. G. Browne on November 9 and 11.

ACCORDING to a notice appearing in *La Technique Moderne* for May, a French committee is now engaged in the establishment of an institute for chemical research as applied to industry. The idea is to create, on the model of the Pasteur Institute and the large American research institutes, a powerful scientific organisation at which all kinds of researches of interest to industry may be carried out. In addition to founding the research institute at Paris, the committee intends to provide the means to make grants on a liberal scale to those workers who wish to carry out their work in private laboratories. Missions will also be sent abroad for the purpose of studying conditions there.

THE use of the different species of woods and the preference accorded to the various kinds in industry are determined mainly by experience. In France especially no methodical investigations have hitherto been carried out on the various timbers grown in the country. This want is now to be filled by the enterprise of the Administration des Eaux et Forêts. A series of researches will be undertaken by that Department in consultation with the Technical Section of the Aeronautics Department, dealing with the properties of native woods from the point of view of their utilisation. The first-named Department will collect samples of wood of known origin, and these will be subjected to suitable mechanical tests by the Aeronautics Department. The results of the tests, together with the specimens, will be sent to the research station of the Nancy Forestry School.

AN important discussion on "The Present Position of Vitamines in Clinical Medicine" was opened by Prof. F. Gowland Hopkins at the eighty-eighth annual meeting of the British Medical Association at Cambridge. A full report of the proceedings will be found in the *British Medical Journal* for July 31. Prof. Hopkins said that he deplored the scepticism concerning the whole question of vitamines which has been displayed by certain members of the medical profession, and gave definite experimental evidence of the effects of deficient diets. The remainder of the paper was devoted to the principal forms of disease which are now recognised as associated with the absence, to a greater or less degree, of one or more of the vitamines from a dietary. The diseases mentioned were scurvy, beri-beri, the xerophthalmia of experimental animals, and rickets. During the discussion which followed further evidence of the importance of vitamines in a normal diet was given by various contributors.

WE have received from Messrs. Flatters and Garnett, Oxford Road, Manchester, a catalogue of mounted microscopical preparations which they are able to supply. The list is a very comprehensive one, ranging from numbers of protozoa, worms, insects, and other invertebrates to vertebrate tissues and structures. Botanical preparations, bacteria, diatoms, petrological specimens, and textile fibres are included, and the firm is also prepared to supply botanical material and pond-life for class purposes. The prices appear very moderate.

IN *Medical Science: Abstracts and Reviews* for July (vol. ii., No. 4) one of the reviews is devoted to the subject of diabetes, and some interesting particulars are given. In the years immediately preceding the war the deaths from diabetes remained constant, whereas during the four years 1916–19 they declined from 444 pre-war to 202. The male sex showed a greater decline than the female, and the percentage mortality among children sank as low as in adults. No case of diabetes was observed as the result of cerebral concussion. These facts give no support to the nervous hypothesis of the causation of diabetes. It is stated that there was a similar diminution in diabetes during the siege of Paris in 1870–71, and during the German occupation of Lille in the late war many of the less severe diabetic cases improved or recovered—probably as a result of the food scarcity.

A CHADWICK lecture on "Health Conditions in Eastern Europe: Typhus a Serious Menace" was given by Dr. Norman White (Medical Commissioner, Typhus Commission, League of Nations) on July 15 at the Surveyors' Institution, Westminster, S.W.1. The countries considered were Latvia, Esthonia, Lithuania, Poland, and the Ukraine. Poland, through which pass the main lines of communication with Russia, has suffered more than her smaller neighbours. Sanitary conditions in this portion of Europe are in a deplorably backward condition, and soap, fuel, and other facilities for cleanliness are unobtainable in many districts, while louse infestation among the poorer classes is almost universal. A large portion of the lecture was devoted to the consideration of typhus fever, the part played by the louse in the conveyance of the disease being described. Emphasis was laid on the danger to other countries arising from the persistence of this focus of epidemic disease. The essential requirements for the anti-typhus campaign were outlined, and the point was made that every country in the world has a very real concern in the existing health conditions of Eastern Europe, apart from humanitarian considerations.

DR. W. CROOKE in the Journal of the Royal Anthropological Institute (vol. xlix., July–December, 1919) discusses the question of "Nudity in India in Custom and Ritual." The present Hindus, like all Orientals, wear scanty clothing, but the rules of decency are generally observed. There are, or were until recently, several degrees of habitual nudity. The earliest stage of clothing seems to have been that of bark, and this and drapery made of sedge and other leaves are still in use in parts of the country. Nudity appears in various magical rites like rain-making, while in the case of some ascetics it implies the renunciation of all family and social obligations. This condition, in the case of rites connected with magic and witchcraft, is fully illustrated, as well as the ætiological legends which have been invented to explain the custom.

IN the Journal of the Royal Anthropological Institute (vol. xlix., July–December, 1919) Mr. Harold Peake discusses "The Finnic Question and some Baltic Problems." Until recent years it was generally supposed that the Finns, like the Lapps and Samoyeds, were an Asiatic people with Mongoloid affinities. On the other hand, Ripley supposes the Finns to be of the Nordic race or closely allied to them, while Ruggeri believes that Proto-Nordics, Proto-Finns, and Proto-Mediterraneans are branches of a common stock which originated on the confines of Europe and Asia. Mr. Peake's conclusion, after a careful review of the evidence from physical anthropology and culture, seems to be that towards the latter half of the third millennium a period of drought occurred in the steppe-lands of the northern hemisphere and caused the Nordic steppe-folk to disperse in various directions. It may be that to this date we must attribute the retreat to the Volga basin which resulted in the hybrid type known as the Red Finns, but the main body seems to have crossed or passed round the plain of North Germany to Denmark, where, perhaps, they met and coalesced with the people of the kitchen-middens; they afterwards passed across the Danish islands to Sweden as the men of the passage-graves, driving before them the Mongoloid aborigines, who had now reached the stage of Arctic culture.

THE lighting of picture-galleries and museums presents problems that have not yet been solved in practice, and especially is this the case with reflections from glass. In the July issue of the *Museums Journal* Mr. Hurst Seager sets forth the scientific principles that are necessary for success. At the recent conference of the Museums Association he gave a brilliant demonstration of their application, and an account of this appears in the August number of the journal. All museum directors should study Mr. Seager's advice, of which the correctness has been proved by a gallery at Wanganui, N.Z. With the July number the *Museums Journal* opened a new volume; with the August number its price is raised to 2*s*.

WE have received from the British Association Committee on Zoological Bibliography and Publication recommendations as to the way in which an author should introduce references to previous work quoted by him. Footnotes are condemned. The committee recommends that, at all events in the case of longer articles containing many references, a "list of works referred to," arranged with the names of authors in alphabetical order, should be printed at the beginning or end of each article. In these lists the title of the paper, name of the journal, date, number of series and volume and the pages should be given. It would then, in the text of the article, be necessary to quote only the author's name and the date, with the addition of a page-number where required. The committee also discusses additions to the rules which should be followed when introducing new genera or species in zoological publications.

IN the Report of the American Museum of Natural History for 1919 President H. F. Osborn continues his vigorous beating of the educational drum. The museum, he writes, "is actually going backward." Want of space and want of funds prevent the orderly arrangement of the material already accumulated. When the dinosaur rubs shoulders with the mammoth, small wonder that newspaper science represents them as contemporaries. The harmonious development of exhibition galleries is at a standstill. African, Asiatic, Polar, and Oceanic Halls are lacking; for lack of halls of fishes, of reptiles, and of birds of the eastern hemisphere these animals are untruthfully arranged. And the remedy? Extension of the museum on the plan originally intended, partly as a memorial to Theodore Roosevelt, whose connection with zoology is a great asset for more than one museum, and partly by separating the tax rolls and assessments for educational purposes from the general municipal rates and starting a direct poll-tax for education—a tax which would have a basis ten times as broad and would be more willingly paid. It must not be inferred that Dr. Osborn overlooks the research work of the museum, which is the necessary foundation of its educational activities. The team-work on fossil vertebrates accomplished under his guidance by Dr. W. D. Matthew and an accomplished staff is a brilliant witness to the contrary, and the report records a long list of researches and publications in various branches of science. But in New York, as in this country, it is through an appeal to the public on educational grounds that funds can most readily be raised.

Science and Industry for March, the official journal of the Australian Institute of Science and Industry, contains a detailed account of the results of investigations in New South Wales on the extraction of tannins from wattle-bark, which are of great importance to the Australian leather industry. For many years the bark used has been obtained from two species, the golden wattle of South Australia (*Acacia pycnantha*) and the black or green wattle (*A. decurrens*) and its varieties. As a result of the gradual destruction of wattle-trees the Australian supply has been largely supplemented by wattle-bark imported from Natal, where plantations grown from Australian seed have been formed. A valuable tan-bark is also yielded by the mallet (*Eucalyptus occidentalis*) of Western Australia. The faulty methods adopted for the extraction of tannins are criticised, and an improved process is suggested.

IN his presidential address to the Linnean Society of New South Wales (abstract of Proceedings, March 31, 1920) Mr. J. J. Fletcher referred to the morphology of the so-called phyllodes characteristic of many of the Australian acacias. According to the definition in text-books, these are the flattened leaf-stalks of bipinnate leaves which have lost their blades, whereas they really represent the primary axes of bipinnate leaves which have lost their pinnæ. Accordingly the name "euphyllode," as implying something more than merely flattened petioles, is proposed for them. The president also referred to the recent costly visitation of drought, and pointed out the need for a handbook or manual setting forth the theoretical complementary side of the practical activities of the man on the land, especially in relation to drought problems. A synopsis indicating the scope and contents of such a handbook was offered for discussion.

MR. F. DEBENHAM, who accompanied Capt. Scott on his last Antarctic expedition, puts forward (Quart. Journ. Geol. Soc., vol. lxxv., p. 51, 1920) an ingenious suggestion to explain the transfer of marine deposits from the sea-floor to the surface of glacier ice, and so finally to the land when glaciers melt away. A massive glacier protruding seaward may pick up such material by accreting ice along its base. Successive accretions from the freezing sea raise this lower layer until finally it comes to the surface, where ablation is active during summer. It may then be transported to some point impinged on by the ice. The interesting occurrence of sodium sulphate, as mirabilite, in the ice is held to be due to concentration of sea-water in cold sub-glacial lagoons, the water of which has furnished ice, enclosing the separated salt. The case of the Great Salt Lake of Utah, in which sodium sulphate separates when the temperature falls below about 20° F. (−7° C.), is cited as an illustration.

A MEMORANDUM regarding the probable amount of monsoon rainfall in 1920 by Dr. Gilbert T. Walker has recently been issued. Data of importance are given showing how the monsoon rainfall in India is affected by previous weather conditions over various parts of the earth. In summing up the effects of the various factors it is mentioned that the prejudicial effect of snowfall from Persia to the Himalayas is exerted when at the beginning of June the accumulations extend over a larger area than usual. The great excess of snow reported this year is confirmed by the low temperatures in the Punjab. Heavy rainfall in South Ceylon, Zanzibar, East Africa, and Seychelles is prejudicial, but data for this year show a moderate deficit or normal conditions. A close relationship exists between heavy rain in Java from October to March and low barometric pressure in Bombay in the succeeding six months; in Java the rainfall was nearly normal and its effect is negligible. High barometric pressure in Argentina and Chile is a favourable condition, but this year pressure is in slight defect. It is stated that the conditions indicate that in North-West India the monsoon is likely to be weak, at any rate in the earlier part of the season, and for the rainfall of the Peninsula, North-East India, and Burma the indications are not sufficiently definite to justify a forecast.

THE Italian Laboratory of Practical Optics and Mechanics of Precision, which was founded in Florence last year on the suggestion of the Minister of Public Instruction to spread a knowledge of recent advances in instrument-making amongst those engaged in the industry in the country, has undertaken the issue of a monthly *Review of Optics and Mechanics of Precision*. The number for March and April consists of a little more than thirty quarto pages. The first seven are devoted to a continuation of a report by Prof. L. Silberstein on the quantum theory of spectra. The improvements which Sommerfeld has introduced into the theory by ascribing two degrees of freedom to the electron instead of the one degree of Bohr's theory are dealt with. Constructional optics is represented by articles on the calculation of achromatic objectives and on objectives for aerial photography. Metrology gets an article of sixteen pages on measurements of precision in the mechanics workshop by Mr. V. I. N. Williams, of Armstrong, Whitworth's, Manchester. There appears to be no publication in English which serves the same purpose for our own industries that this review does for those of Italy.

THE July issue of *Science Progress* contains a *résumé* by Mr. S. C. Bradford of the theory of the constitution of the atom propounded by Langmuir in the June issue of the Journal of the American Chemical Society last year. Unlike the "sun and planets" theory which has been so successfully developed by Bohr, the new theory assumes the electrons which surround the positive nucleus to be at rest. They form shells around the nucleus, the number in each shell being twice the square of the number of the shell counted from the nucleus. When the number of electrons is insufficient to fill a number of shells, it is the outer shell which is incomplete. In these outer shells there is a tendency for the electrons to form groups of eight or "octets" either amongst themselves or by association with the electrons of other atoms. The chemical properties of the atom depend mainly on the number of electrons in the outer shell not associated together in octets. The properties of hydrogen, helium, neon, lithium, carbon, nitrogen, oxygen, and fluorine, the similarity in the behaviour of CO_2 and N_2O, of CO and N_2, and the difficulties which compounds of nitrogen raise on the usual theory of valency, are all explained in a simple way by the new theory.

IN NATURE of July 8 we gave an account of the work done recently at the National Physical Laboratory. The appearance of the report of the laboratory for the year 1919 enables us to supplement that account by some information as to the progress of the institution as a Government establishment. With regard to buildings, the new control appears to involve exceptional delay. Extensions contemplated in 1918 and urgently needed have been approved by the Research Department, but not yet authorised by the Treasury. In consequence, apparatus already delivered cannot be housed and utilised. The number of posts in each grade of staff has been fixed, and the conditions of service approximate to those in the Civil Service. In special cases, however, promotion by length of service may be departed from, subject to the approval of the Research Department. Industry appears to be claiming many of the staff who have by their past work added materially to the reputation of the Laboratory, and it is of the utmost importance that the most promising of the younger members of the staff should be retained by sufficiently attractive posts. The Research Department has decided that commercial testing is not in future to be a function of the Laboratory.

A REPORT by Prof. J. C. McLennan on sources of helium in the British Empire has recently been issued by the Department of Mines, Canada (Bulletin No. 31). An investigation of the helium content of natural gas supplies was undertaken at the request of the Board of Invention and Research (London) in 1915, and the report embodies the results, which are now published by permission of the Admiralty. It appears that certain natural gases in Canada form the largest source of supply of helium at present known within the Empire. The percentage of helium present was found to range from zero in gases from the Toronto and British Columbia regions up to about 0·33 per cent. in gases from the Blackheath (Ontario) and Bow Island (Alberta) areas. Two methods were used for isolating the helium: (1) Combustion of the gas with oxygen, the resulting water and carbon dioxide being removed by suitable reagents, and the nitrogen and remaining traces of other gases by means of coconut charcoal cooled in liquid air; and (2) condensation of the hydrocarbons and other constituents having higher boiling points than helium in a condenser immersed in liquid air, the residue being then purified by means of charcoal as before. Figures of the apparatus employed are given. Methods based upon these processes are indicated for the large-scale manufacture of helium, and it is considered that commercial production of the gas is almost certain to be undertaken.

FROM the Central Scientific Co., Chicago, we have received a copy of its catalogue of apparatus used in chemical, bacteriological, biological, industrial, and soil-testing laboratories. The catalogue is very complete, and it indicates the thorough manner in which American manufacturers have developed the production of scientific apparatus. Practically all the articles described are stated to be "American made," the only important item of foreign manufacture being English (Whatman) filter-paper. Among other matters of interest we note the new "chain" analytical balance, in which the use of a rider and small weights is dispensed with. The finer weighings are obtained by varying the length of a small gold chain attached at one end to the beam of the balance, and at the other to a vernier which slides on a graduated vertical column, and is operated by a milled head outside the balance-case. It is claimed that in this way the rapidity and accuracy of weighing are much increased.

AMONG the papers read at the annual meeting of the British Pharmaceutical Conference recently held in Liverpool was one by Messrs. Bernard F. Howard and Oliver Chick upon "Some Recent Samples of 'Grey' Cinchona Bark." A "parcel" consisting of 138 bales of South American cinchona bark received in March, 1920, and analysed by the authors, was found to contain 6·302 per cent. of total alkaloid, the bulk being cinchonine, the figure for which was 5·49 per cent. The bark contained only 0·027 per cent. of quinine. Mr. E. M. Holmes, curator of the Pharmaceutical Society's Museum, has examined the bark, and has expressed the opinion that it is the product of one, or possibly more forms of *Cinchona peruviana*, Howard. The large percentage of cinchonine found in the bark is probably due to the elevation at which the trees grow, as this factor, and the accompanying differences of heat and moisture, are known to influence the character of the alkaloids present.

AT the recent annual meeting of the British Pharmaceutical Conference a paper entitled "Cresineol" was contributed by Mr. T. Tusting Cocking, who showed that when oil of eucalyptus and ortho-cresol are mixed heat is evolved, and on cooling a mass of glistening crystals, consisting of an equimolecular combination of cineole and ortho-cresol, is formed. This is a new compound, which has been named "cresineol." It may be recrystallised from various solvents, and forms beautiful white, transparent, prismatic crystals, melting at 55·2° C. and boiling at 185° C. Cresineol is volatile, and possesses a pleasant camphoraceous odour. It is not caustic in its action on the skin, and yet contains 41 per cent. of cresol. Having high germicidal properties, it is likely to prove of great value as an antiseptic for both internal and external application. The fact that a solid compound is formed when oil of eucalyptus and ortho-cresol are mixed can be made use of as a means of determining the amount of cineole in oil of eucalyptus. The method is based on the determination of the freezing point of a mixture of the oil with ortho-cresol; having observed this point, one may read off directly from a curve given by the author the percentage of cineole contained in the oil.

MESSRS. W. HEFFER AND SONS, LTD., Cambridge, have in the press a book by Dr. A. Harker entitled "Notes on Geological Map Reading," the object of which is to teach the student to visualise a geological map as in three dimensions, and to show that the questions which present themselves to the field-geologist reduce to exercises in very elementary geometry. This simplicity is gained by reckoning all slopes and dips as gradients, thus enabling trigonometry and the protractor to be dispensed with. The amount of dip, the thickness of a formation, the throw of a fault, etc., are measured directly upon a contoured geological map by the use of the scale alone.

Our Astronomical Column.

THE HILL OBSERVATORY, SIDMOUTH.—The council of this observatory has just issued its annual report for the year ending June, 1920, and it is satisfactory to note that all instruments and other equipment are in good condition and that the observatory is now in full working order again. The chief work undertaken consists in photographing the spectra of stars down to magnitude 5·30 and classifying them according to Sir Norman Lockyer's scheme of increasing and decreasing temperatures. Spectra are also photographed of nebulæ and other special objects. An interesting addition has recently been made to the regular work of the observatory in the form of a line of investigation suggested by Prof. W. S. Adams. Prof. Adams has found that the relative intensities of certain lines in stellar spectra vary with the absolute magnitude of the star, and thus, provided the apparent magnitudes are known, a fairly simple method is available for the determination of stellar parallaxes. The line intensities referred to are measured by means of a wedge of dark glass specially made for the purpose, the position of the wedge being noted at which the lines are just obliterated. Some encouraging results have been obtained from preliminary work. A party of members of the British Association visited the observatory at the close of the Bournemouth meeting. The party included several eminent astronomers, some of whom have consented to form a research committee, intended to act as an advisory body on all matters connected with the research work of the observatory.

THE INFRA-RED ARC SPECTRA OF SEVEN ELEMENTS.—No. 372 of the Scientific Papers of the U.S. Bureau of Standards gives the results of an investigation on the wave-lengths longer than 5500 Å. in the arc spectra of seven elements made by Messrs. C. C. Kiess and W. F. Meggers. The yellow, red, and infra-red regions of the arc spectrum of titanium, vanadium, chromium, manganese, molybdenum, tungsten, and uranium were photographed with a large concave grating spectrograph. The photographs were made on plates sensitised to these spectral regions by means of pinacyanol and dicyanin dyes. The wave-lengths of more than 2500 spectral lines were measured, extending from the green at 5500 Å. into the infra-red beyond 9700 Å. So far as is known, impurity lines and spurious lines have been eliminated from the wave-length tables. Frequency differences which were suspected of being constant have been found in each of the spectra. Those who are specially interested in this work may obtain a copy of the paper by applying to the Bureau of Standards, Washington.

NEW SOLAR RADIATION STATION IN ARIZONA.—An anonymous benefactor has given funds to the Smithsonian Institution for the establishment of a new solar observing station in the Haqua Hala mountains in the Arizona desert. The site was chosen as "being probably the most consistently cloudless region in the United States." Dr. C. G. Abbot has gone to set up this station, which will duplicate the work that has been done for some years at Calama, Chile; it is stated that the results obtained there are of assistance in predicting the weather and temperature in Argentina. As is well known, Dr. Abbot considers that, besides the 11-year variation, there are irregular changes in the solar radiation from day to day amounting to as much as 5 per cent., which he suggests may be due either to alterations in the circulation in the sun and consequent variation in the amount of hotter matter brought from the interior, or to changes in the transparency of the solar envelopes.